^{14}C dates and stratigraphy: reconsidering the sequences at Moverna vas (Bela Krajina, southeastern Slovenia)

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ABSTRACT – *Recently obtained AMS ^{14}C dates and the stratigraphic matrix from the Moverna vas site show inconsistencies in the upper part of the stratigraphic sequence. The Bayesian approach to chronological modeling in the OxCal program is used in the paper to present the calendar chronology of Neolithic and Eneolithic settlement phases at the site and to propose a revision of the upper part of the stratigraphic sequence, also partly supported by a typological comparison of a pottery vessel from one of the ^{14}C dated contexts.*

IZVLEČEK – *Novi AMS ^{14}C datumi so neskladni z zgornjim delom stratigrafske matrike iz Moverne vasi. V članku s pomočjo Bayesovega kronološkega modeliranja v program OxCal predstavljamo koledarsko kronologijo neolitskih in eneolitskih poselitvenih faz na najdišču in predlagamo revizijo zgornjega dela stratigrafskega zaporedja, ki jo deloma podpira tudi tipološka primerjava posode iz enega od ^{14}C datiranih kontekstov.*

KEY WORDS – *stratigraphic matrix; ^{14}C dating; Bayesian chronological modeling; Neolithic; Eneolithic*

Introduction

The vertically stratified sites have always been important in conceptualisations of prehistoric cultures and time. Time is conceptualised through the building of stratigraphic matrices, which allow the recognition of the chronological sequence of archaeological deposits and find assemblages. What stratigraphic matrix lacks, however, is temporal depth, the span of calendric time in which deposits and assemblages are formed (*Lucas 2012.121*).

The ^{14}C method allows the dating of deposits and assemblages within the calendar time-frame. The Bayesian approach to building calendar chronologies (*Bronk Ramsey 2009; Bayliss 2009*) is especially useful for temporalising the stratigraphic matrix, as it provides formal probabilistic estimates for the ages of events important to archaeologists or events that might have actually been experienced by people in the past. Furthermore, it provides the duration of activities recognised in the archaeological record. This enables us to exceed the stratigraphic conceptualisation of time as a sequence and consider the temporality of formation processes that created archaeological deposits and assemblages at sites. A much less discussed utility of ^{14}C dating is the ability to recognise and rectify the problematic parts of the stratigraphic matrix. In establishing chronological sequences, the ^{14}C dating and the stratigraphic matrix should be used as complementary methods, especially in cases where the stratigraphic relationships are harder to observe and where the archaeological deposits are finer than the practice of stratigraphic excavation and recording is able to discern. The Bayesian approach is useful here as a tool for testing hypotheses and alternative chronological scenarios.

In the paper, we present the case study of the Moverna vas site calendar chronology (*Budja 1994*), where recently obtained AMS ^{14}C dates contradict the stratigraphic matrix in its uppermost part. By confronting the two sets of data, we suggest a partial adjustment of the stratigraphic matrix, with the repositioning of some stratigraphic units. Furthermore, the ^{14}C dates reveal two groups of probability distributions, suggesting a previously unrecognised phase of occupation at the site. The Bayesian approach to chronological modeling is used in the paper to present the calendar chronology of Neolithic and Eneolithic settlement phases at Moverna vas.

The Moverna vas site is located in the Bela Krajina Region (southeastern Slovenia) on a plateau overlooking and bordering on three sides the bending gulch that the River Krupa has carved through an undulating lowland Dinaric karst landscape (Fig. 1). The observations and analyses conducted at the site provide us with a long stratigraphic and typological sequence of deposits and find assemblages spanning the 5th and 4th millennia calBC (*Budja 1988; 1989; 1990a; 1990b; 1992; 1994; 1995; Andrič 1993; Tomaž 1997; 1999; Žibrat Gašparič 2008; Sraka 2012*).

A series of excavations was carried out at the Moverna vas site in the 1980s, with excavations in 1988 being one of the first in Slovenia that complied with the principles of archaeological stratigraphy (*Budja 1988; 1990a; 1994*). The stratigraphic matrix (Fig. 2) shows the superposition of naturally formed layers in which finds were deposited more or less accidentally, indicating indirect traces of settlement. These layers were largely deposited over the whole excavation area, were vertically separated by recognised interfaces and contained more direct remains of human life at the site, such as post-holes, refuse pits, hearths and collapsed daub walls of houses interspersed within the deposits and on the former living surfaces. According to the excavator, "*The stratigraphic sequence in Moverna vas shows a repetition of natural processes and anthropogenic activity. We recognized the former as processes of loam and soil sedimentation and erosion and the latter as building, destruction and everyday activity [translated by the author]*" (*Budja 1990a.127*).

The linear stratigraphic sequence of layered deposits was integrated with the interlinear correlation of various stratigraphic units, such as posts, pits and walls, which were supposedly associated with human activity and can be considered roughly chronologically synchronous (*Budja 1990a.127; 1994.18–21*). The integration of the two lead to the conceptualisation of the temporally structured archaeological record at Moverna vas as a sequence of cultural phases of human occupation or settlement phases. The sequence of phases is represented by repetitions of activities such as building, destruction and everyday life, complemented by continuous natural processes of erosion and sedimentation (Figs. 2 and 3). Nine settlement phases were recognised, with phases 2 through 6 being associated with the Neolithic period and phases 7 through 9 with the Eneolithic period, according to the pottery typology. The supposed chronological association of find assemblages was examined with the evaluation of the dispersion of pottery fragments that once formed the same vessel within the individual stratigraphic units. Because the vertical dispersion of fragments is delimited by the layer interfaces, the find assemblages consistently represent individual settlement phases at the site (*Budja 1990a.130–2; 1994.21*).

^{14}C samples and their stratigraphic contexts

Thirty-seven ^{14}C dates are currently available from the Moverna vas site (see Appendix), of which twenty-seven were obtained from carbonised residues on pottery and the remainder from charcoal samples. The first charcoal samples were obtained from metrically defined layers of the un-stratigraphic excavations in 1984 (*Budja 1988.50–51; 1989.97*) and were measured at the Ruđer Bošković Institute in Zagreb by the gas proportional counting technique (*Srdoć* et al. *1987.139*). Further charcoal samples were obtained from stratigraphic layers related to the Neolithic phases after excavations in 1988 and were dated at the Oxford Radiocarbon Laboratory (*Budja 1994.Fig. 5*). A programme of direct AMS dating of carbonised residues from the interior surfaces of pottery vessels was recently initiated, together with the application of lipid extraction and characterisation of the organic residues absorbed in vessel walls. Samples relate to all phases and were dated at the Poznan Radiocarbon Laboratory (*Žibrat Gašparič 2008.Fig. 5.1; Sraka 2012.appendix*; see Appendix).

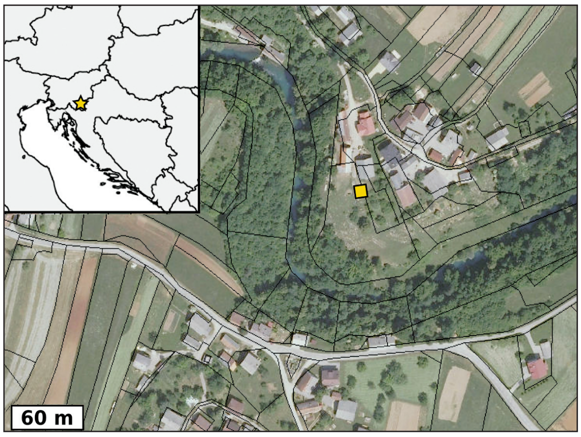

Fig. 1. Location of Moverna vas site in the Bela Krajina region, southeastern Slovenia.

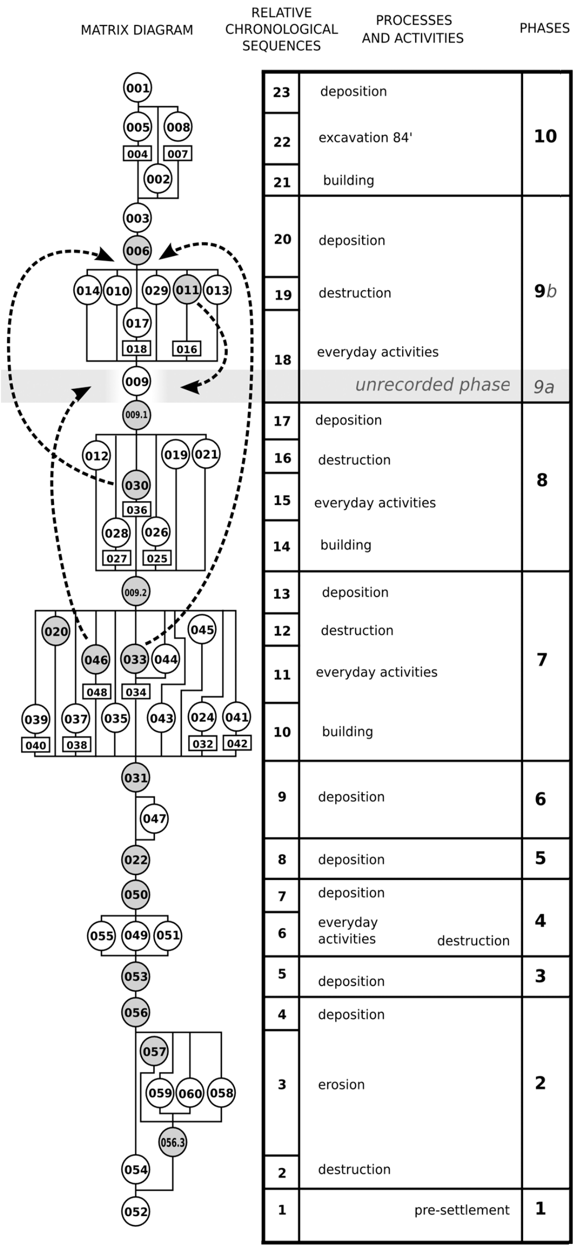

Fig. 2. The stratigraphic matrix and phasing at the Moverna vas site with shaded ^{14}C dated contexts and the indication of the revised parts of the stratigraphic sequence (adapted after **Budja 1988.Fig. 6***).*

In the latest dating programme, ^{14}C samples were obtained from the previously undated Eneolithic phases, in order to expand the chronological model and sketch out the general chronological structure of the whole stratigraphic sequence. Short-lived samples in the form of carbonised residues on pottery were preferred, but due to their limited preservation in the Eneolithic assemblages, mostly charcoal was sampled. All ^{14}C dates from the site are listed in the Appendix, together with the relevant contextual information. In Bayesian modeling, only dates on samples from the stratigraphic excavation in 1988 are used.

Figure 3 shows the modified composite section of stratigraphic units associated within individual phases. New ^{14}C dates originate from each of the Eneolithic layers (009.2, 009.1, 006) as well as from a patch of burnt daub (020) and refuse pits (033, 046, 030, 011). Each layer corresponds to originally defined phases 7, 8 and 9, respectively, with pits and the daub patch also associated with separate phases.

In all cases, the dates from pits (but not the one from the daub layer) contradict those from the layers. Dates from pits 033, 046 and 030 have much younger calendar ages than those from layers 009.2 and 009.1, with which they are integrated in the 7th and 8th phases, respectively. The probability distributions of dates from pits 033 and 030 (Poz-54005, Poz-54007) partly overlap with the ^{14}C date on carbonised residue from layered deposit 006, associated with the 9th phase (Poz-53998). The probability distribution of dates from pits 046 and 011 (Poz-54003, Poz-54009) lie somewhere between the ^{14}C dates from layers representing the 8th and the 9th phase. The probability distributions of the problematic ^{14}C dates thus fall into two groups, one before the middle of the 4th millennium and the second around the turn of the 4th and 3rd millennium calBC (Fig. 4b). These dates contradict the established stra-

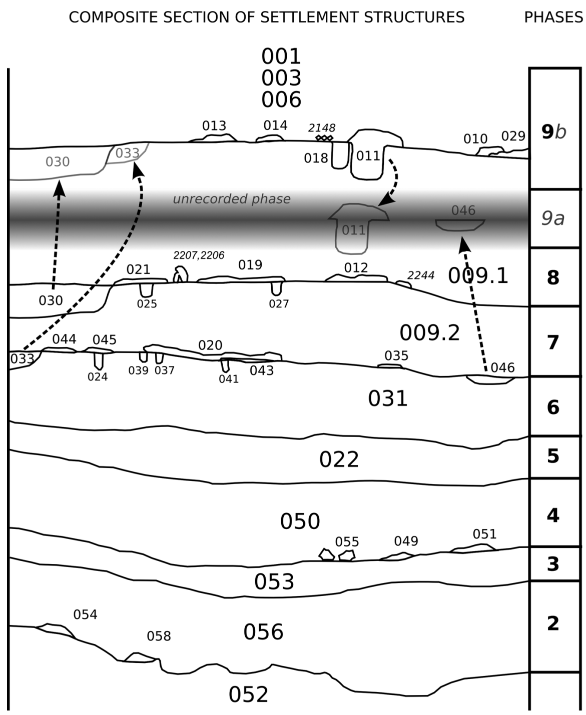

Fig. 3. The composite section, showing associated remains of human occupation within individual phases and the indication of the revised parts of the stratigraphic sequence (adapted after **Budja 1994.Fig. 7***).*

tigraphic matrix, but are invaluable in revealing the problematic parts of the site stratigraphy.

The 'old wood effect' on the charcoal samples, although possible, can not explain the contradiction, as the dates appear younger, not older, than expected. However, sample infiltration is possible, so further, preferably short-lived, ^{14}C samples are needed to resolve the issue. The unexpected results prompted us to revisit the ^{14}C sample contexts and their position within the stratigraphic matrix at the site. The stratigraphic matrix can be partly changed with the repositioning of the mentioned pits. The two mentioned groups of probability distributions suggest at least two phases of occupation within the deposit originally associated with the 9th phase. This is further elaborated in the following section. The suggested modification of the stratigraphic sequence is indicated in Figures 2 and 3.

The inconsistency between the ^{14}C dates for layers and pits point to the difficulties that archaeologists face when trying to define the level from which pits are cut. All Eneolithic phases at Moverna vas are represented by approx. 0.5m of soil deposit on average. So it is not surprising that some of the pits became associated with layers with which they originally were not. Besides the ^{14}C data, the association of pits 033 and 030 with the originally defined 9th phase rather than the 7th or 8th phase is suggested also by the conservatively drawn cross-section from the un-stratigraphic excavations in 1984 (compared to the rather interpretative cross-section from the stratigraphic excavations in 1988) in the section where the two excavation areas meet. The ^{14}C dates suggest at least one phase of occupation at the site for which no associated archaeological deposit was recorded, but which is evidenced by pits 046 and 011, previously associated with the 7th and 9th phases, respectively (Fig. 3).

Bayesian modeling of the site calendar chronology

The basic idea behind the Bayesian modeling of archaeological chronologies is encapsulated in a simple theorem published by clergyman Reverend Thomas Bayes in the mid-18th century: *posterior = likelihood x prior*. This simply means that we analyse the ^{14}C data we have collected about a problem (*likelihood*) in the context of our existing archaeological information (*prior*) in order to arrive at a new understanding (*posterior*). Put differently, the Bayesian approach integrates ^{14}C dates and other chronologically relevant information available to archaeologists and allows the development of calendar chronologies for a wide variety of archaeological situations, from site-based sequences to regional spatio-temporal phenomena. Despite the fact that the statistical procedures and computing necessary for its implementation are incomprehensible to most archaeologists, computer programs such as OxCal provide simple tools for developing Bayesian models (*Bronk Ramsey 1995; 1998; 2008; 2009; Bayliss 2007; 2009*). The Bayesian approach does not provide final answers and is a heuristic tool for testing and comparing chronological models; the results are never absolute and final and are subject to change when additional ^{14}C data and archaeological information become available.

In developing a Bayesian model of the Moverna vas site chronology we use the OxCal computer program, version 4.2.3 (*Bronk Ramsey 2009*) with the implemented IntCal13 calibration curve (*Reimer* et al. *2013*). The intention is to use the sequence of phases, explained above and shown in Figures 2 and 3, as prior archaeological information for grouping and sequencing the ^{14}C dates (Informative prior in Bayesian modeling). Specific ways of chronological modeling imply specific assumptions that underlie the statistical procedures implemented in the OxCal program. In our case, the assumption is that each phase represents a delimited period of occupation at the site.

The recent ^{14}C dating results inclined us to partly change the approach to the Bayesian modeling of the Eneolithic settlement phases, unlike the modeling of the Neolithic phases, which remains unchanged (*Sraka 2012.355–358, Fig. 2*). The chronological model consists of two parts, the first represented by phases 2 to 8 and the second by phases 8, 9a and 9b. These two parts of the model should be viewed differently in terms of conservativeness and the certainty of the dating results. In the first part of the model, the phases are modeled as contiguous, sharing the same transitional boundary. In the second part, the phases are modeled as sequential, as the preliminary assessment of the ^{14}C dates suggests temporal gaps between them. The different parts of the model differ in the way that they deal with samples of different quality (short-lived versus long-lived).

In the first part of the OxCal model, the short-lived carbonised residue dates from the pottery vessels are assumed to sufficiently represent human activity related to individual phases. The program assumes them

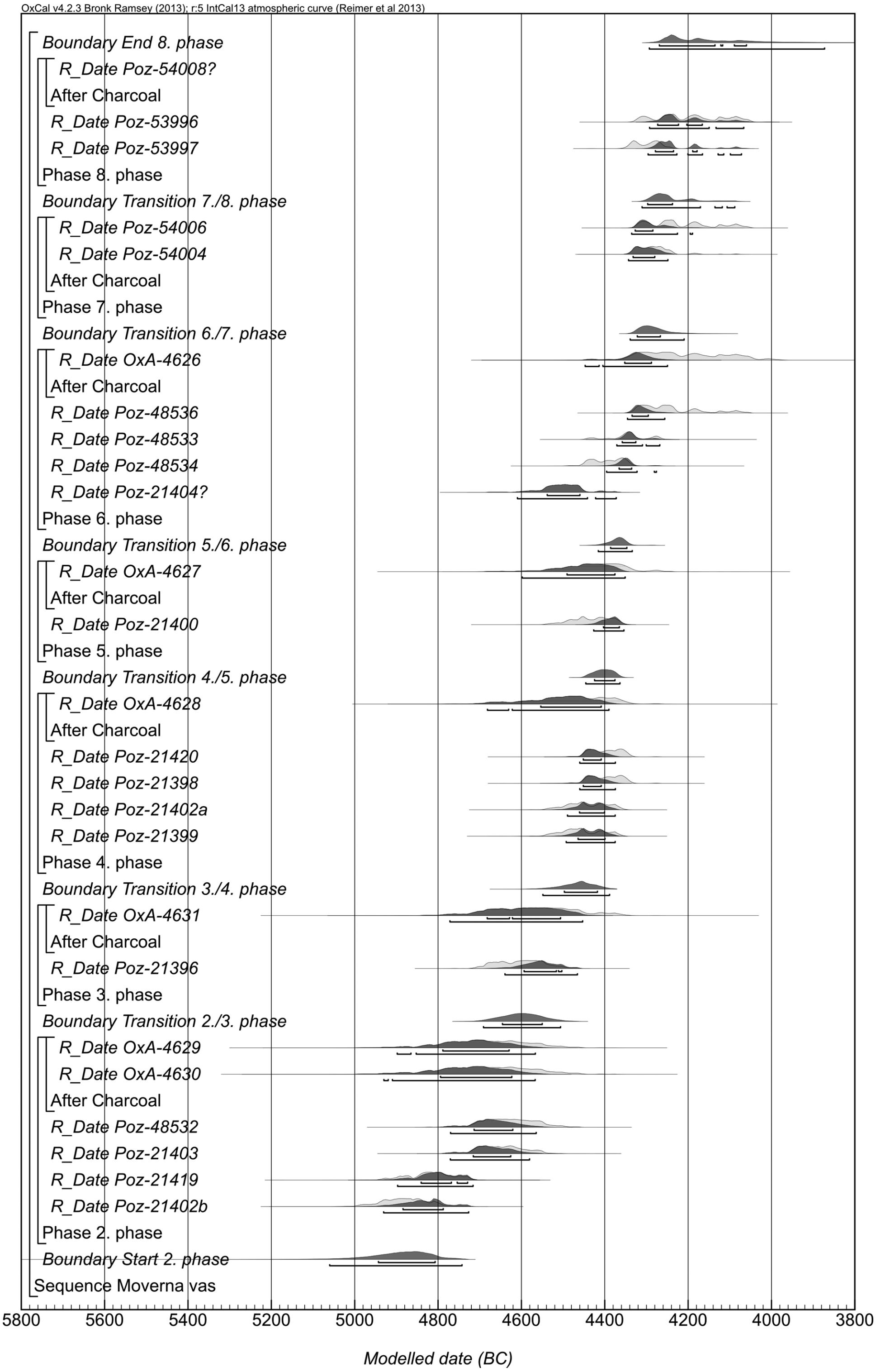

Fig. 4a. Posterior probability distribution of the modeled ^{14}C dates from phases 2 through 8 in Moverna vas.

to be uniformly distributed events within individual phases (Uninformative prior in Bayesian modeling). Charcoal dates, on the other hand, are less directly related to activities within individual phases, due to the possible 'old wood effect'. The probability distribution of the two sample types (where both date the same stratigraphic context) do not differ markedly; nevertheless, the ^{14}C dates on charcoal from the first part of the model are not fully incorporated into the model and are included only as *termini post quos* (*Bayliss* et al. *2011.56–58*). This means that they only effectively define the ending but not the beginning of phases. Despite the loss of precision, not incorporating the long-lived samples fully into this part of model makes the results more conservative.

In the second part of the OxCal model, however, the distinction between the ^{14}C dates of different quality cannot be made, as the majority of the samples are on charcoal. Here both carbonised residue and charcoal dates are fully incorporated into the model. The different treatment of parts of the same model may seem inconsistent or even hypocritical. Bayesian modeling is used here as a heuristic tool for testing and gradually improving the models (*Bayliss 2007*). The ^{14}C dates which date to the 4th millennium calBC fall into two clearly separated groups of probability distributions. The first group is represented by ^{14}C dates from pits 046 and 011, previously associated with the 7th and 9th phases, respectively. The second group of probability distributions consists of dates from layer 006, associated with the originally defined 9th phase, with an addition of the two pits 033 and 030, previously associated with the 7th and 8th phases respectively. On the basis of these two groups of probability distributions, the second part of the OxCal model is divided into two sequential phases, 9a and 9b. The second part of the model should be seen as tentative, both because of the lower quality (charcoal dates probably not directly related to the activities and events of deposition) as well as quantity of the ^{14}C dates, when compared to the well-established first part of the model.

Calendar chronology of the Neolithic and Eneolithic settlement phases on the site

The posterior probability distributions obtained as results of the modeling presented above are presented graphically in Figure 4a for the first part of the model (phases 2 through 8) and in Figure 4b for second part (phases 9a and 9b). The estimated calendar ages for the boundaries between phases and estimated durations of phases are presented in Table 1. The model has an agreement index of 108.5%. One ^{14}C date on carbonised residue (Poz-21404) from the 6th phase is inconsistent and is an outlier, as a replicated sample (Poz-48534) on carbonised residuefrom the same vessel shows consistency with the model. One further ^{14}C date on charcoal (Poz-54008) had to be excluded from the model, as it is significantly later than other dates from the same layer. It is probably an infiltrated sample from later activity on the site.

According to the results, the Moverna vas site was first occupied in the first centuries of the 5th millennium calBC, while the youngest ^{14}C dates point to human activity around the end of the 4th and the beginning of the 3rd millennium calBC. The span of the calendar chronology of the site is approximately two millennia; however, the site does not seem to have been occupied continuously. The Neolithic part of the model is well established and provides a tighter calendar dating for the phases and their find assemblages. According to the estimated phase durations, phases 4 to 8 follow each other at relatively short intervals of no more than a few human generations per phase and suggest continuous occupation in the Neolithic. The dating of the first two Eneolithic phases, 7 and 8, is less secure, due to the limited number of available ^{14}C dates and especially due to the plateau shape of the calibration curve in the 2nd half of the 5th millennium calBC. The supposed continuity of occupation on the site is inter-

Events and intervals	Estimated age (calBC) or duration (years)	
	68.2% probability	95.4% probability
Boundary Start 2. phase	4945–4808	5065–4744
Interval 2. phase	191–377	95–513
Boundary Transition 2./3. phase	4647–4551	4692–4506
Interval 3. phase	71–203	4–248
Boundary Transition 3./4. phase	4497–4418	4551–4387
Interval 4. phase	0–78	0–147
Boundary Transition 4./5. phase	4425–4376	4447–4364
Interval 5. phase	0–44	0–81
Boundary Transition 5./6. phase	4387–4348	4418–4334
Interval 6. phase	38–117	0–167
Boundary Transition 6./7. phase	4322–4267	4340–4210
Interval 7. phase	0–47	0–126
Boundary Transition 7./8. phase	4298–4238	4311–4087
Interval 8. phase	0–115	0–368
Boundary End 8. phase	4270–4061	4294–3874
Boundary Start 9a. phase	3745–3545	4041–3534
Interval 9a. phase	0–327	0–716
Boundary End 9a. phase	3638–3399	3641–3158
Boundary Start 9b. phase	3126–2934	3361–2915
Interval 9b. phase	58–338	0–615
Boundary End 9b. phase	2901–2804	2919–2619
Span Moverna vas	1938–2139	1869–2339

Tab. 1. Calendar age estimates for Boundary events and estimates of durations of Neolithic and Eneolithic phases at Moverna vas.

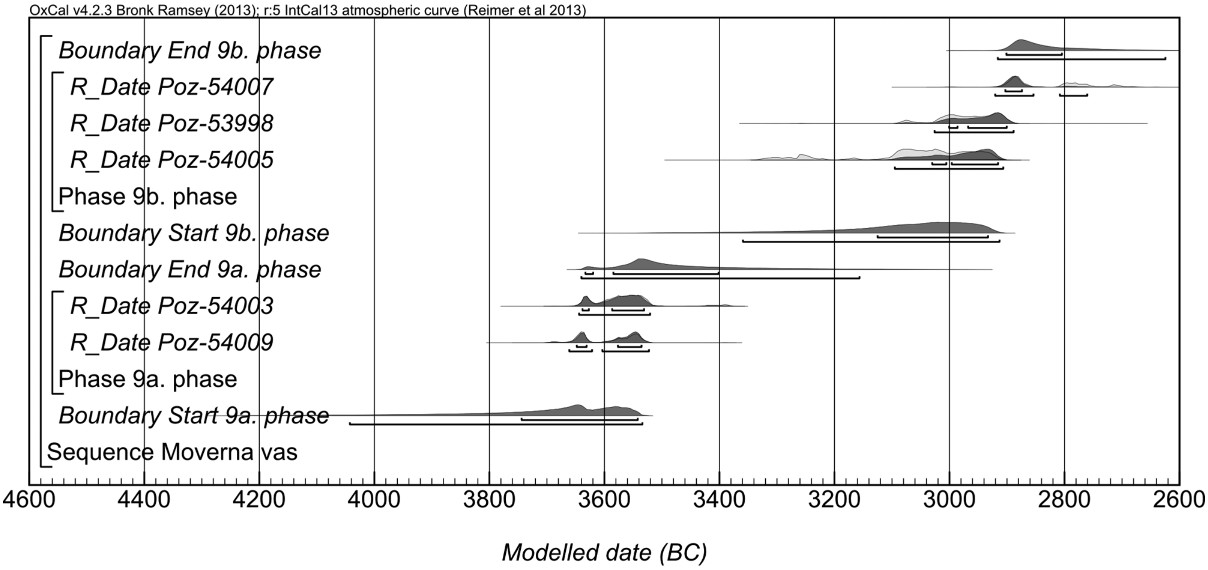

Fig. 4b. Posterior probability distribution of the modeled ^{14}C dates from phases 9a and 9b at Moverna vas.

rupted in the last centuries of the 5th millennium calBC.

The latter Eneolithic part of the model with phases 9a and 9b is provisional, and the results are preliminary at best. Phase 9a can probably be dated to the 37th or 36th century calBC. Phase 9b can be very coarsely dated to the last centuries of the 4th and first centuries of the 3rd millennium calBC. Additional, preferably short-lived ^{14}C samples are needed from the latter part of the stratigraphic sequence at Moverna vas in order to substantiate the dating of phases 9a and 9b.

The association of pit 030 with phase 9b rather than the 8th phase is further supported by the typological comparison of an egg-shaped pot found in the pit. (*Tomaž 1999.Pl. MV39.2*). The pot is decorated (except for the neck) with barbotine application. The rim is bent backwards and stuck on the outer wall and is decorated with finger impressions. The closest analogies can be sought on the Ljubljansko barje, especially at Parte-Iščica (compare *Velušček* et al. *2000.Pl. 4.3*) and Parte (compare *Harej 1987. Pl. 15.7*), where similar backwardly bent rims, decorated with finger impressions and barbotine are numerous. Parte-Iščica is dated to the 29th and 28th centuries calBC (*Čufar* et al. *2010.2036*). The ^{14}C date on charcoal from pit 030, from which the mentioned pot originates, is actually the youngest of all the dates currently obtained from Moverna vas and its probability distribution partly overlaps with the calendar dating of the Parte-Iščica in the early 29th century calBC.

Conclusion

Recently obtained AMS ^{14}C dates contribute to the calendar chronology of the Neolithic and Eneolithic settlement phases at Moverna vas. By confronting the ^{14}C dates and the stratigraphic matrix, we suggest moving pits 011, 030, 033 and 046 to a different position within the stratigraphic sequence and their re-association with other settlement phases at the site. The ^{14}C probability distributions suggest a previously unrecognised phase of occupation at the site. The calendar chronology at Moverna vas spans about two millennia of human occupation. In the 5th millennium, occupation was continuous, with well-established calendar dating of archaeological deposits and find assemblages. The discontinuous occupation in the 4th millennium calBC is at the moment only preliminarily dated. The new calendar chronology allows a more thorough exploration of the palimpsests characterising the archaeological record at Moverna vas and demonstrates the need for ^{14}C dating to be seen as an integral part in constructing the stratigraphic matrices at sites.

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Appendix

Site	Year	Lab Code	Age (BP)	SD (±a)	Material	Stratigr. unit	Interpre-tation	Period	Pottery assemblage	Reference
Moverna vas	1984	Z–1474	5400	140	charcoal	2//7	n/a	n/a	n/a	*Srdoč* et al. *1987.139*
Moverna vas	1984	Z–1475	4900	130	charcoal	2//6	n/a	n/a	n/a	*Srdoč* et al. *1987.139*
Moverna vas	1984	Z–1476	3875	130	charcoal	2//5	n/a	n/a	n/a	*Srdoč* et al. *1987.139*
Moverna vas	1984	Z–1685	3900	100	charcoal	2//5	n/a	n/a	n/a	*Srdoč* et al. *1987.139*
Moverna vas	1988	OxA–4626	5390	80	charcoal	031.4	6. phase	Neolithic	*Tomaž 1999.Pl. MV33–36*	*Budja 1994.Fig. 5*
Moverna vas	1988	OxA–4627	5580	80	charcoal	022	5. phase	Neolithic	*Tomaž 1999.Pl. MV27–32*	*Budja 1994.Fig. 5*
Moverna vas	1988	OxA–4628	5640	80	charcoal	050.2	4. phase	Neolithic	*Tomaž 1999.Pl. MV17–26*	*Budja 1994.Fig. 5*
Moverna vas	1988	OxA–4629	5830	80	charcoal	057	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Budja 1994.Fig. 5*
Moverna vas	1988	OxA–4630	5830	90	charcoal	056.3	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Budja 1994.Fig. 5*
Moverna vas	1988	OxA–4631	5720	90	charcoal	053	3. phase	Neolithic	n/a	*Budja 1994.Fig. 5*
Moverna vas	1988	Poz–21396	5750	40	carbonised residue	053.1	3. phase	Neolithic	n/a	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21398	5550	40	carbonised residue	050.2	4. phase	Neolithic	*Tomaž 1999.Pl. MV17–26*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21399	5630	40	carbonised residue	050.1	4. phase	Neolithic	*Tomaž 1999.Pl. MV17–26*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21400	5610	40	carbonised residue	022.1	5. phase	Neolithic	*Tomaž 1999.Pl. MV27–32*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21402a	5620	40	carbonised residue	050.1	4. phase	Neolithic	*Tomaž 1999.Pl. MV17–26*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21402b	5990	40	carbonised residue	050.2/056	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1984	Poz–21403	5800	40	carbonised residue	//7	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21404	5670	40	carbonised residue	031.4	6. phase	Neolithic	*Tomaž 1999.Pl. MV33–36*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1984	Poz–21419	5940	40	carbonised residue	//7	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–21420	5550	40	carbonised residue	050.2	4. phase	Neolithic	*Tomaž 1999.Pl. MV17–26*	*Žibrat Gašparič 2008.Fig. 5.1*
Moverna vas	1988	Poz–48532	5780	50	carbonised residue	056.1	2. phase	Neolithic	*Tomaž 1999.Pl. MV1–16*	*Sraka 2012.Appendix*
Moverna vas	1988	Poz–48533	5490	40	carbonised residue	031.4	6. phase	Neolithic	*Tomaž 1999.Pl. MV33–36*	*Sraka 2012.Appendix*
Moverna vas	1988	Poz–48534	5540	40	carbonised residue	031.3	6. phase	Neolithic	*Tomaž 1999.Pl. MV33–36*	*Sraka 2012.Appendix*
Moverna vas	1988	Poz–48536	5390	40	carbonised residue	031.4	6. phase	Neolithic	*Tomaž 1999.Pl. MV33–36*	*Sraka 2012.Appendix*
Moverna vas	1984	Poz–48537	5580	40	carbonised residue	1/4/6	n/a	Neolithic	n/a	*Sraka 2012.Appendix*
Moverna vas	1988	Poz–53996	5360	40	carbonised residue	009.1	8. phase	Eneolithic	*Tomaž 1999.Pl. MV39–40*	first published here
Moverna vas	1988	Poz–53997	5445	35	carbonised residue	009.1	8. phase	Eneolithic	*Tomaž 1999.Pl. MV39–40*	first published here
Moverna vas	1988	Poz–53998	4340	40	carbonised residue	006	9. phase	Eneolithic	*Tomaž 1999.Pl. MV41–42*	first published here
Moverna vas	1984	Poz–53999	5640	40	carbonised residue	2/15, 16/4, 5	n/a	Neolithic	n/a	first published here
Moverna vas	1984	Poz–54000	5300	30	carbonised residue	2/11/4	n/a	Eneolithic	n/a	first published here
Moverna vas	1988	Poz–54003	4785	35	charcoal	046	7. phase	Eneolithic	*Tomaž 1999.Pl. MV37–38*	first published here
Moverna vas	1988	Poz–54004	5420	35	charcoal	020	7. phase	Eneolithic	*Tomaž 1999.Pl. MV37–38*	first published here
Moverna vas	1988	Poz–54005	4410	40	charcoal	033	7. phase	Eneolithic	*Tomaž 1999.Pl. MV37–38*	first published here
Moverna vas	1988	Poz–54006	5370	35	charcoal	009.2	7. phase	Eneolithic	*Tomaž 1999.Pl. MV37–38*	first published here
Moverna vas	1988	Poz–54007	4235	35	charcoal	030	8. phase	Eneolithic	*Tomaž 1999.Pl. MV39–40*	first published here
Moverna vas	1988	Poz–54008	4570	35	charcoal	009.1	8. phase	Eneolithic	*Tomaž 1999.Pl. MV39–40*	first published here
Moverna vas	1988	Poz–54009	4825	35	charcoal	011	9. phase	Eneolithic	*Tomaž 1999.Pl. MV41–42*	first published here